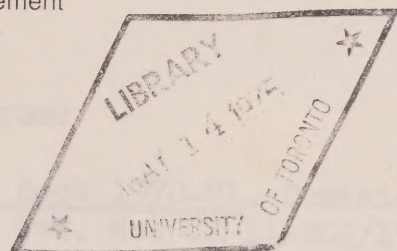


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WITH SPECIAL REFERENCE TO THE DECLINE IN FERTILITY

by

M.V. George

REPRINTED PUBLICATION No. 17

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TRENDS IN POPULATION GROWTH IN CANADA WITH SPECIAL REFERENCE TO THE DECLINE IN FERTILITY*

Births, deaths and migration are the three components of population change. Each is affected in its own way by a number of factors but the trends of births and deaths, at least, have conformed to a fairly clear pattern of development in the past. In the developing countries of today, the sharp decline in mortality has been the main factor for the unprecedented population growth and the variations in growth rates in the past one or two de-

* Prepared by M. V. George, Chief, Demographic Analysis and Research Section, Census Division, Dominion Bureau of Statistics. Part of the material used is taken from a draft paper, "The Declining Fertility in Canada", by the author and Evelyn Lapierre.



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acades. On the other hand, in the economically developed countries including Canada, the variations in fertility have been the main factor for changes in population growth rates in recent decades. In the developed countries, death rates are very low and rather stable, and fertility (birth rates) has become the dominant and problematic factor in population change in recent years. Furthermore, the fall of birth rate in the world today, which has occurred in most of the industrialized countries, is a function of conscious and voluntary restriction of births through improved contraceptive practices. The recent fertility decline in Canada and its causes and implications for current and future population growth and structure should be viewed in this world setting.

The average annual rate of population growth in Canada since 1961 was the second lowest in this century, the lowest being in the depression decade, 1931-41 (Table I). Because natural increase (births minus deaths) and migration are dominant factors in Canada's population change, an examination of the relations between natural increase, net immigration and total population change in the period concerned is necessary to assess the direct contribution of each factor. The aim of the following discussion is to portray the dimension of recent population growth in Canada against the background of previous trends, to show how the declining trend has evolved in the 1960s, paying particular attention to the recent decline in fertility, and to consider its possible continuation in the future.

Total Growth and Its Components

The decade 1951-61 had a population growth rate of 30.2 p.c., the second highest rate in this century. The growth rate fell sharply to 9.7 p.c. between 1961 and 1966 and, according to the post-censal estimates of population, has since continued to fall; the current annual rate of growth (1968-69) was only 1.5 p.c. In absolute numbers, the population increment between 1961 and 1966 was 1,777,000, the total reaching 20,015,000 in 1966 and an estimated 21,061,000 in 1969. Because of the open nature of Canada's population, in that the population is affected by external migration, natural increase and net migration combined to produce the observed fall in the nation's growth rate. However, the major factor of the population growth was the natural increase. Of the total change of 1,777,000 population between 1961 and 1966, 85.4 p.c. was attributable to natural increase and the remainder to net immigration; in 1961-62 and 1962-63 when the amount of net migration was very low, 94.5 p.c. of the increase was due to natural increase alone.

1.—NUMERICAL AND PERCENTAGE CHANGES IN THE POPULATION OF CANADA,
INTERCENSAL PERIODS 1901-66 AND 1966-69

Period	Numerical Change	Percentage Change	Average Annual Percentage Change
	'000		
1901-11.....	1,835	34.2	3.4
1911-21.....	1,581	21.9	2.1
1921-31.....	1,589	18.1	1.8
1931-41.....	1,130	10.9	1.1
1941-51.....	2,503	21.8 ¹	2.2
1951-61.....	4,229	30.2	3.0
1951-56.....	2,071	14.8	3.0
1956-61.....	2,157	13.4	2.7
1961-66.....	1,777	9.7	1.9
1966-69 (estimated).....	1,046	5.2	1.7

¹ Includes Newfoundland in 1951 but not in 1941; excluding Newfoundland in both years, the change amounted to 2,241,000 or 18.6 p.c.

Table II shows clearly the separate contribution of each factor of population growth in recent years. The rates of net migration were obtained by subtracting rates of natural increase from the rates of population increase. Unlike the rates of net migration, the rates of natural increase have declined steadily since 1957. Advances in social and medical care had little effect on the already low crude death rates which remained fairly stable

since 1956 at an average of between seven and eight per 1,000 population. The infant mortality rate was 20.8 per 1,000 births in 1968. Thus, the death rate is stabilized at such a low level that further declines cannot be very great unless there is a major breakthrough in controlling the cardiovascular-renal diseases which account for a high proportion of deaths. The low death rate was reflected in the high life-expectancy at birth—68.7 years for males and 75.2 years for females—in 1965-67. On the other hand, like the trend in the rates of natural increase, there was a parallel decline in the national crude birth rate (births per 1,000 population) since 1957, which was reflected in the crude birth rates of the provinces, with variations in rates of decline. The most spectacular was the phenomenal 45.1-p.c. fall in the crude birth rate in Quebec where 88 p.c. of the population is Roman Catholic; it declined from 29.7 in 1957, the fourth highest rate among the provinces in that year, to 16.3 in 1968, the lowest among the provinces. During 1966, when the rate of decline was the highest, the national birth rate declined by as much as 10.4 p.c. Thus, it is clear that birth rate has been the dynamic element in the recent sharp fall in growth rate in Canada.

II.—CRUDE BIRTH, DEATH AND NATURAL INCREASE RATES, MIGRATION RATES AND RATES OF POPULATION INCREASE, 1950-69

NOTE.—The rates of net migration were obtained by taking the difference between rates of population increase and natural increase.

Year	Crude Birth Rate	Crude Death Rate	Crude Natural Increase Rate	Rate of Net Migration	Rate of Population Increase (per 1,000)
1956.....	28.0	8.2	19.8	4.6	24.4
1957.....	28.2	8.2	20.0	12.9	32.9
1958.....	27.5	7.9	19.6	8.7	28.3
1959.....	27.4	8.0	19.4	4.2	23.6
1960.....	26.8	7.8	19.0	3.1	22.1
1961.....	26.1	7.7	18.4	2.2	20.6
1962.....	25.3	7.7	17.6	1.3	18.9
1963.....	24.6	7.8	16.8	1.9	18.7
1964.....	23.5	7.6	15.9	3.1	19.0
1965.....	21.3	7.6	13.7	4.7	18.4
1966.....	19.4	7.5	11.9	7.0	18.9
1967.....	18.2	7.4	10.8	8.7	19.5
1968.....	17.6	7.4	10.2	6.4	16.6
1969.....	17.6	7.3	10.3	5.0	15.3

Trends in Birth Rate and Other Fertility Measures

The crude birth rate declined steadily from 28.5 in 1954 to 17.6 in 1968, the lowest rate ever recorded in Canada. Even during the depression period of the 1930s the lowest birth rate recorded was 20.1 in 1937. It is widely known that birth rate is the product of a number of variables and is affected by changes in the age-sex composition of the population to which it refers. Hence, birth rates standardized for age-sex composition of the population may be used for an analysis of the trend. Although in 1968 the standardized birth rate (standardized with respect to the age distribution of women in 1956) did not deviate from the crude birth rate, for most of the previous years of recent decline in birth rate there were significant differences between the two rates, the standardized rate being higher than the crude birth rate. For example, in 1963 the standardized birth rate, at 26.4, was 7.3 p.c. higher than the corresponding crude birth rate at 24.6. The declining trend in the difference between the crude birth rate and the standardized birth rate suggests that the unfavourable effect of age distribution on birth rate is decreasing. Thus, the abrupt fall in crude birth rate in the early part of the 1960s was partly the result of the unfavourable age composition of the population, i.e., women in the childbearing ages. This unfavourable effect may be attributed mainly to: (1) the decline of crude birth rate in the 1920s and 1930s with its impact on the female population of childbearing ages in the 1960s; (2) the increase in the number of births in the postwar period and the consequent

increase in the total population without a corresponding increase in the number of women in the childbearing ages; and (3) the long-run decline in the death rate, particularly in the very young and old ages where the main reduction of mortality occurred.

A more effective way of studying the trends and patterns of fertility is to examine the age-specific fertility rates and total fertility rates which are free from the effect of the variations in the proportion of women in the childbearing ages.* Table III and the following chart show clearly the magnitude and pattern of recent fertility decline.

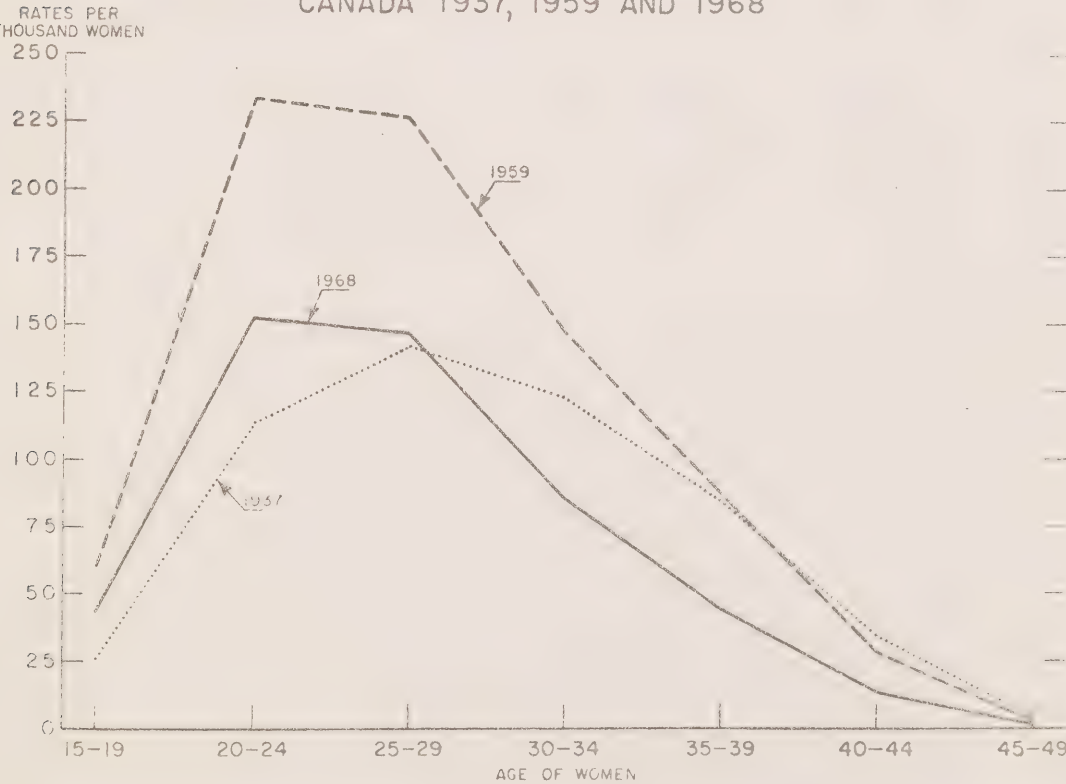
* Age-specific fertility rates give the number of annual births per 1,000 women of reproductive period, by age. Total fertility rate is the sum of the age-specific fertility rates for single years of age of women; it is thus the average number of children born per woman (or 1,000 women) upon completion of the childbearing period, without mortality.

III.—PERCENTAGE CHANGE IN AGE-SPECIFIC FERTILITY RATES AND TOTAL FERTILITY RATES, 1926-37, 1937-59 AND 1959-68

NOTE.—Excludes Newfoundland for all years and the Yukon and Northwest Territories prior to 1951.

Age Group	Fertility Rates				Annual Average Change		
	1926	1937	1959	1968	1926 to 1937	1937 to 1959	1959 to 1968
15-19.....	29.0	25.6	60.4	43.4	-1.1	+6.2	-3.1
20-24.....	139.9	113.6	233.8	152.5	-1.7	+4.8	-3.9
25-29.....	177.4	142.2	226.7	147.1	-1.8	+2.7	-3.9
30-34.....	153.8	123.4	147.7	85.8	-1.8	+0.9	-4.7
35-39.....	114.6	85.3	87.3	44.4	-2.3	+0.1	-5.5
40-44.....	50.7	34.7	28.5	13.8	-2.9	-0.8	-5.7
45-49.....	6.0	4.2	2.7	1.4	-2.7	-1.6	-5.3
Total Fertility Rates.....	2,357	2,046	3,935	2,441	-1.8	+2.2	-4.2

AGE-SPECIFIC FERTILITY RATES,
CANADA 1937, 1959 AND 1968



According to the fertility rates and standardized birth rates the steady fall of fertility in Canada started after 1959. Between 1959 and 1968 the total fertility rate declined by 8.0 p.c. from 3,935 (per 1,000 women) to 2,441 or, on an average, by 4.2 p.c. per annum. The recent drop in fertility rate was much higher than during the previous period of fertility decline of the 1930s; between 1926 and 1937 the average annual decline was only 1.9 p.c. There was also a difference in the pattern of the latest decline compared with that in the 1930s. In the latter period the rate increased with the age of women. The older the women the greater was the decline in fertility; about 54 p.c. of the decline in total fertility rate during this period was due to the decline in age-specific fertility rates for women over 30 years of age. In the recent period, the pattern was just the opposite. There were only minor differences in the rates of fertility decline between young and old ages, which suggested that the recent decline was concentrated in the younger ages. This is due to the fact that the decline of fertility rates for women in the most reproductive ages (20-30) has a greater effect on the total fertility rate, since absolute levels of age-specific fertility rates are higher for women in those ages than in the ages over 30. About 60 p.c. of the decline in total fertility rate was due to the decline in age-specific fertility rates for women under 30 years of age.

The Marriage Factor

The factors influencing fertility are many and varied. Important factors affecting the birth rate during any period are the proportions of women married, the age at which they marry and the duration of marriage. Unfortunately, adequate data are not available to examine in detail the effect of these factors on the recent fertility decline in Canada. Although there has been a steady increase in the rate of illegitimate births in Canada, most of the births take place within marriage (including births that are illegitimately conceived but occur after marriage); illegitimate live births comprised only 9 p.c. of the total live births in 1968. Thus, changes and trends in marriage patterns generally affect the annual number of births.

Marriage patterns have undergone some notable changes in Canada over the past 25 or 30 years. After a slight upward trend during the 1930s, the mean age at marriage moved consistently downward between 1941 and 1961 and then again turned slightly upward, suggesting the emergence of a new trend in the marriage pattern since 1961. The mean age at marriage of women for first marriages (calculated from proportions of single women reported in censuses) increased from 21.4 years in 1961 to 21.7 years in 1966; the median age at marriage of all brides (calculated from marriage statistics) also shows a slight upward trend in the recent years.

The differences in marriage patterns can be clearly seen in the changes that have occurred in the proportions of women currently married or single at various ages within the 15-49 age group over the past few years. There was a decrease in the proportions of women married for the age groups under 25 years between 1961 and 1966 from 8.7 p.c. to 7.6 p.c. for the age group 15-19 and from 59.2 p.c. to 55.4 p.c. for the age group 20-24. A more penetrating analysis than has thus far been undertaken would be required to establish reasons for the slight upward trend in age at marriage and in the proportions married for the age groups under 25 years. However, a number of factors may be given as possible explanations, such as the tendency for more young people to go to university, the difficulty for young people to find jobs, the reduction in unplanned marriages following unwanted pregnancies as a result of the use of effective methods of birth control, and the non-availability of suitable male partners. The last factor is known as the "marriage squeeze"* where the males in marriageable ages are outnumbered by females in corresponding ages. The relative excess of brides is the result of the customary practice of women selecting older males for marriage. The conditions of availability were unfavourable for women between 1962 and 1966 or for the cohorts of women born between 1942 and 1946 when the ratios

* For details on the phenomenon of "marriage squeeze", see Donald S. Akers, "On Measuring the Marriage Squeeze", *Demography*, Vol. 4, 1967, pp. 907-924.

in the number of males aged 20-24 to the number of females aged 15-20 were less than 1.00.^{*} The unfavourable situation for women may be because female children born in the baby-boom period reached marriageable ages while the appropriate grooms represented the smaller cohorts born during the depression period.

Part of the decline in fertility as measured by the crude birth rate, age-specific and total fertility rates may be attributed to the observed change in marriage pattern and the resulting distribution of population by marital status and marriage duration. With the data available, it is difficult to measure precisely the role of marriage on fertility level and pattern. However, using the data on proportions married among women and marital fertility rates (births per currently married women by age), an approximate estimate of the effect of changes in marriage pattern may be made. Assuming that all births are legitimate, total fertility is a function of marital fertility rates and proportion of women currently married by keeping one of these factors constant and varying the other, it is possible to approximate the effect of each separately on change in total fertility rate between two points of time. It is assumed for this calculation that the higher the proportions of women married, the higher the risk of childbearing. The results of this calculation indicate that although nuptiality was not the chief factor of fertility decline in the recent years, it contributed to about 9 p.c. of the total fertility decline between 1961 and 1967. In this connection it may be noted that the postwar fertility recovery was due mainly to the marriage factor.

Because change in nuptiality pattern did not seem to have had any prominent effect on the change in total fertility in recent years, the declining birth rate or fertility rate should be attributed mainly to other factors such as: (1) the postponement of births by recent cohorts of women in the childbearing ages, and (2) the control of fertility, or the role played by the contraceptive pill on spacing and limitation of births.

Postponement of Births

With the available data it is difficult to know precisely whether the decline in fertility is indicative of a shift in the timing of childbearing or in the family size norms among couples. Both possibilities should be considered and are indicated in several studies, particularly data based on the United States. According to the former view, the decline in fertility is essentially the result of a shift in the timing of births from younger to older ages (postponement) which will have no marked effect on the completed fertility rate. The latter view is that fertility decline reflects a change in the reproductive pattern that will bring about a smaller family size.

One way of assessing the contribution of the postponement factor to the recent declining trend in fertility may be to examine order of birth and age of mother. The data on the average age of mother by parity (order of births) indicate that the average age of mother has gone up since 1964 for parity two and over. For those with one child, the recent trend is downward.

The recent trend in the distribution of births by order of births is consistent with the trend in the average age of mother. Thus, there has been a substantial increase in the proportion of births of first order and a small increase in the second order since 1963. All other orders showed a decrease during the same period. The reduction in childlessness among married couples and the increase in illegitimate rate might have contributed to the rise in first order births. The proportion of married women remaining childless in Canada has dropped from about 15 p.c. from 1906-07 cohorts to slightly above 5 p.c. for the cohorts born in the 1930s.[†] The decrease in the higher orders (three and over) coupled with an increase in the age of mother suggests the postponement of births by mothers with two or more births. The reduction in fertility for the older women may be attributed to the fact that they married young and have reached the size of family they desire to have and, with the present contraceptive techniques, can now control fertility more effectively

^{*} See A. Romanuc, "Fertility Projections by the Cohort Methods for Canada, 1965-1984", Census Division, DBS, 1970 (unpublished).

[†] A. Romanuc, *op.cit.*

than could be done in the 1940s and 1950s. Since decline in the postponement of births occurred for higher order births, it is plausible that postponement of births is concentrated among mothers with two or more children.

Further, there appears to have occurred a divergence in the period and cohort fertility rates as a result of postponement of births.* A comparison of the cohort fertility rates for cohorts of women born between 1900 and 1950 with the period fertility rates indicates that some of the later cohorts of the 1920s and 1930s who had not yet completed their fertility in 1966 had already reached fertility levels much higher than those of the completed fertility† levels of the earlier cohorts. For example, the 1931 cohort had cumulative fertility rates of about 3,038 by age 40 and 3,175 by age 45, which were higher than the completed rates for the 1911 and 1916 cohorts.** Such unusually high fertility rates among younger cohorts of women suggest that there was a temporary inflation in fertility during the latter part of the 1940s and the 1950s which is partly responsible for the recent decline in fertility particularly at the older ages. Cohorts born in 1910-25 (approximately) who were about 25-34 years of age by 1960 and had postponed marriage and childbearing during the depression years, and cohorts born in 1926-35 (approximately) who were 15-24 years of age by 1950 had contributed to the inflation in fertility that occurred in the 1950s. However, these data do not explain the reason for the recent decline of fertility at the younger ages.

Control of Fertility

It has already been shown that the marriage factor has not played any prominent role in the decline of fertility in recent years, suggesting that young couples are either postponing their births or reducing the ultimate size of their families by effective means of birth control. The trend in fertility rates since 1959 fits in well with the hypothesis that the decline has been due to the widespread use of the contraceptive pill. Two things may be noted before assessing the role of the pill. First, the low fertility level in the 1930s was not achieved by the use of the pill but by other methods of fertility control then in use. Secondly, before the pill came into wide use in Canada (it became available on a prescription basis only in 1961), the fertility rate had already started to decline (since 1959). Thus, it is evident that the present decline in fertility level probably could have been achieved by rational fertility control without the use of the pill.

The findings of a study on the use of oral contraception in the United States in 1965, based on survey data, suggest that the contribution of oral contraception to the recent decline in the birth rate in that country was substantial for young married couples.† Similar data are not available for Canada, but preliminary results of the recent fertility inquiry in Metropolitan Toronto showed that nearly one half of the women using contraceptives were using the oral pill and that about two thirds of the present oral users began to use them for the first time after January 1965. It was also observed that women with no children and those with four or more children had a clear preference for the pill over the other methods of contraception.*** Such a preference for the pill among contraceptive users is consistent with the fertility decline among young and older women observed earlier. Perhaps a major effect of the use of the pill might have been longer postponement of births and avoidance of unwanted conceptions mainly because of its greater efficiency than other contraception methods.

* Period measures of fertility deal with the childbearing experience of persons during a particular year or specified period of time. A cohort measure, on the other hand, deals with the childbearing experience of a particular group of persons, identified either by a common time of marriage or common time of birth through their entire reproductive span.

† The "completed fertility rate", which is sometimes called "average size of family", is the average number of births (per 1,000 women) that an actual group of women has by the end of the childbearing span (age 30 in most cases).

** The figures are taken from unpublished material prepared by Jacques Henrpin for the 1961 Census monograph on fertility in Canada.

† Norman B. Ryder and Charles F. Westoff, "Use of Oral Contraception in the United States, 1965", *Science*, 53 (September, 1966), 1199-1205.

*** J. F. Kantner et al., "Oral Contraception and Fertility Decline in Canada, 1966-1968. A First Look at a Crucial Component in the Argument", University of Western Ontario, London, Ontario, 1968 (mimeographed).

Prospects for the Future

The future course of fertility in Canada depends mainly upon whether the current completed fertility rate will remain constant, fall or rise in future. It is difficult to predict whether young couples will have fewer children than the cohorts preceding or whether their lowered fertility may be made up in later years. It is possible that postponement of births may lead to revising expectations downward with the new norms regarding family formation, and consequent decline in ultimate family size. Whatever the precise reason for the declining trend in fertility, family size of not more than three children has become the accepted pattern among young couples. The findings on fertility expectations based on surveys conducted in the United States support such a view. According to one study, "virtually all American couples consider at least two children as desirable, and most achieved that number unless they are subfecund".* In several papers, Freedman has stated that about 90 p.c. consider two to four children "ideal for the American family".† Furthermore, a potent factor likely to affect the future fertility in both its quantity and its timing is the increase in the reproductive competence, whether by way of development of better methods or enlarge knowledge of available contraceptive procedures, or greater diligence in their employment.** Thus, when children are born and how many will be born appear to be increasingly rational decisions by couples, based on immediate economic and social circumstances.

As for absolute number of births and crude birth rate, they are likely to increase in the near future even if the current fertility rates do not increase, because of the expected increase in the size of the future childbearing population. According to the DBS current population estimates and most recent population projections (Series B), between 1968 and 1971 the number of women in the most reproductive age groups, 20-24 and 25-29, will increase from 829,000 to 952,200 and from 682,800 to 795,000, respectively.‡

Assuming that the 1968 age-specific fertility rates will remain constant until 1971, expected births and crude birth rate were calculated for 1971 using the projected total population and women aged 15-49. The results show that between 1968 and 1971 the annual number of births will increase from 364,310 to 401,280 and the birth rate from 17.6 to 18.5. Thus, it may be expected that the continuing decline in birth rate will abate in the near future, resulting in a slight upward trend in the rates of natural increase and total population growth. According to the projected figures (Series B), the increase in the population of Canada will be 8.14 p.c. between 1969 and 1974, and 28.1 p.c. between 1969 and 1984, which is equal to an average annual increase of 1.9 p.c. during the next 15 years as against the current annual increase of about 1.5 p.c. It may be noted, however, that the anticipated rate of population increase for the next 15 years is much lower than that of the past 15 years.

* Larry Bumpass and Charles F. Westoff, "The Prediction of Completed Fertility", *Demography*, Vol. 6, No. 4, 1969, p. 446.

† Ronald Freedman, "American Studies of Factors Affecting Fertility", *International Population Conference, New York, 1961*, International Union for the Scientific Study of Population, London: John Wright, 1962, 1, pp. 57-73.

** Norman B. Ryder and Charles F. Westoff, "Fertility Planning Status: United States, 1965", *Demography*, Vol. 6, No. 4, 1969, p. 443.

‡ "Population Projections for Canada, 1969-1984", *Analytical and Technical Memorandum No. 4*, Census Division, DBS, Processed April 1970.

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